The invention relates to a bandage for the prevention of radial luxation of the thumb.

Many sports, in particular skiing, entail the risk of overstraining the first phalanx of the thumb. This may, e.g. in the case of falls, lead to traumatic luxation including overstrain or rupture of the ulnar capsular ligamentous apparatus of the first phalanx of the thumb. Accordingly, the underlying area of the invention was to find simple ways and means to prevent such a hyperextension or overstretching of the thumb.

The invention solves the problem by holding parts which enclose the first phalanx of the thumb on the one side and the first phalanx of at least one other finger on the other side, and which are connected with each other via at least one pulling device.

The holding part for the thumb is supported by the index finger and/or another finger by means of a holding part which runs around the first phalanx of at least one other finger, preferably the index finger, and a pulling device which connects these holding parts; therefore, the outward bend of the thumb can be kept within a safe scope in a simple way, because the application of force occurs at an advantageous angle across the thumb via the pulling device which engages e.g. in the first phalanx of the index finger. Forces acting on the thumb in the sense of risking its dislocation can therefore be diverted via the first phalanx of the index finger without risking to overstrain either thumb or index finger. In addition to that, the excursion of the pulling device, which occurs with an increase in the pressure exerted upon it (e.g. through the use of ski poles), reduces the supporting span between the holding parts; the resulting shortened distance between thumb and index finger consequently relieves the capsular ligamentous apparatus and the muscles of the hand. In extreme cases, the holding part for the thumb can be connected with holding parts put around the first phalanges of at least two more fingers via pulling device, to ensure that excessive strain is distributed to all fingers. In this case, an elastic pulling strap is to be recommended, so that variations in the length of the pulling devices can be compensated. Elastic pulling devices must not jeopardize the safety scope of the thumb, however.

The holding parts for the thumb and at least for one other finger can be designed differently, as propping the first phalanx of the thumb on the first phalanx of at least one other finger is all which counts. Nevertheless, very simple constructions are possible if the holding parts and the pulling device are made of a tape loop running around thumb and index finger. If the length of the loop is adequately adjusted to anatomical requirements, a tape loop of this kind constitutes an efficient protection of the thumb from radial dislocation.

To prevent the tape loop from sliding off the first phalanx of the thumb over the ball of the thumb whenever the thumb touches the hand, the two sides of the tape loop can be connected or cross each other in the area between thumb and index finger, which ensures a correct position of the tape loop.

Another variant of wrapping the loop is the following: a pulling strap engages in the loop side turned toward the palm and runs between index finger and thumb, across the loop side turned toward the back of the hand, to the back of the hand and is attached to a holding strap encircling the wrist. The pulling strap engaging in the loop side turned toward the palm prevents a dislocation of the loop along index finger or thumb, ensuring a close fitting of the loop tape to both thumb and index finger as desirable for the support of the thumb. In addition to the fact that the angle scope of the thumb can be adjusted via the pulling strap, also part of the occurring strain can be diverted via the pulling strap. To make the absorption of such a pull via the pulling strap possible, the pulling strap is connected with a holding strap encircling the wrist and therefore cannot be easily slipped off. The thumb is thus protected against luxation, while at the same time its movability within the tolerable angle is preserved.

Another type of bandage results from the following design: holding parts and pulling device are made of one tape forming a center part turned toward the back of the hand, which is continued by two looping ends running around the first phanlanges of thumb and index finger; these ends are running between thumb and forefinger across the

center part turned toward the back, to a holding strap preferably encircling the wrist. In this case the tape does not form a closed loop, which results in an optimal adjustability to the individual hand anatomy. Care must be taken, however, to ensure pullproof fastening of the ends to avoid excessive enlargement of the loop formed by the tape around thumb and index finger.

To achieve an advantageous absorption of forces particularly in the area of the thumb, the holding part for the thumb can be made of a broader section of the tape, providing at the outside a more extensive support for the first phalanx of the thumb.

Although the variants of the bandage can be effectively used as described, particular advantages are gained if the holding part for the thumb and at least another finger as well as the pulling device, as an extra feature added to the invention, form part of a glove: the bandage for the prevention of radial luxation of the first phalanx of the thumb, integrated in the glove, becomes effective when the glove is put on. Gloves used by skiers, gold players, etc. are particularly suitable for this purpose; no additional bandaging measures are required.

The drawing represents the object of the invention by way of example.

Fig. 1 is a diagram of a bandage in accordance with the invention; the bandage is displayed by uninterrupted lines, whereas the dot-dash lines indicate hand and glove.

Figs. 2 to 4 present various types of bandages in accordance with the invention, in a representation corresponding to that of Fig. 1.

All represented types of bandage in accordance with the invention comprise a holding part 1 for the first phalanx of the thumb, a holding part 2 for the first phalanx of at least one other finger, preferably the index finger, and a pulling device 3 connecting the holding parts 1 and 2. Although this is no express requirement the holding parts 1 and 2 and the pulling device are formed by a tape forming an endless loop around thumb

and index finger as shown in Fig. 1, the ends 4 of which are connected to each other between thumb and index finger. A similar effect is achieved by a wrap featuring a figure-of-eight loop with the two loop ends crossing each other between thumb and index finger. A wrap of this kind prevents the loop from slipping over the ball and results in a good fitting of the holding parts 1 and 2 to the first phalanges of the wrapped fingers. The support of the first phalanx of the thumb for its protection against unphysiological bending achieved by this bandage excludes all possibility of radial luxation of the first phalanx of the thumb. Its propping on the first phalanx especially of the index finger provides an advantageous angle of the straining point on the thumb via the pulling device 3, so that simple construction and effective protection of the ulnar capsular ligamentous apparatus can be combined, especially since such a bandage can be easily developed as part of a glove, the use of which guarantees protection without any special bandaging measures.

The bandage in accordance with the type represented in Fig. 2 is made of a tape loop constituting the holding parts 1 and 2 for thumb and index finger, the loop ends 4a and 4b constituting the pulling device 3. In contrast to the type represented in Fig. 1, a pulling strap 5 engages in the loop end turned toward the palm 4a and runs between thumb and index finger across the loop end turned toward the back of the hand 4b to the back; it is fastened to a holding strap 6 encircling the wrist. If the bandage is formed by a glove, for example a ski glove, an open end at one side of the holding strap 6 is of advantage, which is to be closed separately after putting on the glove, or via the ski glove, usually fastened in the area of the cuffs; for the sake of clarity this is not explained in greater detail here.

As the drawing shows, the tape loop, fitted in an advantageous manner to the index finger and thumb, prevents the thumb from bending outwardly beyond the angle tolerated by the length of the loop, because the holding part 2, formed by the loop, is propped on the first phalanx of the index finger, which can easily cope with the propping

forces applied. The tape loop is broader in the region of the thumb to guarantee sufficiently extensive support.

Fig. 3 shows a bandage made from one tape of which the center part 7, turned toward the back of the hand and connecting holding part 1 and 2 as pulling device, as well as the two attaching ends 8a and 8b, looping around index finger and thumb, are running between index finger and thumb across the center part 7 toward a holding strap 6 encircling the wrist. The ends 8a and 8b cross each other preferably in the area between thumb and index finger. This type of wrap makes an optimal adjustment to anatomical conditions possible, since the length of the ends 8a and 8b can be adjusted, and the point of impact on the holding strap 6 can be chosen accordingly.

Finally, Fig. 4 represents the possibility of distributing pressure acting on the thumb to several fingers, if the holding part 1 for the first phalanx of the thumb is connected not only to holding part 2 for the first phalanx of the index finger, but also to the holding parts 2a, 2b for the first phalanges e.g. of the index finger and the ring finger via the pulling device 3, 3a, and 3b. Like the other types, this bandage can also be produced by using tape loops.

Obviously the invention is not limited to the types presented. Thus a one-piece connection of the holding parts 1, 2 with the pulling device is not necessary. The holding parts 1, 2 could be constituted by sections of the finger parts of a glove, e.g. by outside leather thongs, these glove parts to be connected via separate pulling devices. What is important is, to guarantee an efficient pull connection for the support of the thumb. The bandage also can be located inside or outside a glove.

Summary:

A bandage preventing radial luxation of the thumb is described; its special supporting effect is achieved by means of holding parts (1, 2) which enclose the first phalanx of the thumb as well as the first phalanx of at least one other finger and are connected by at least one pulling device (3).

(Fig. 1)

Patent Claims:

(1) Bandage preventing radial luxation of the thumb, characterized by holding parts (1, 2) which enclose the first phalanx of the thumb as well as the first phalanx of at least one other finger and are connected by at least one pulling device (3).

(2) Bandage in the sense of Claim 1, featuring a tape loop which constitutes holding parts (1, 2) and pulling device (3).

(3) Bandage in the sense of Claim 2, in which the two parts of the loop (4a, 4b) are connected with or cross each other in the area between thumb and index finger.

(4) Bandage in the sense of Claim 2, characterized by a pulling strap (5) which engages in the loop side turned toward the palm of the hand (4a); the strap is running to the back of the hand between index finger and thumb across the loop side turned toward the back of the hand (4b) and is fastened to a holding strap encircling the wrist (6).

(5) Bandage in the sense of Claim 1, characterized by the holding parts (1, 2) and the pulling device (3) being constituted by a strap forming a center part turned toward

the back of the hand (7); starting from there, two end parts are wrapped around the first phalanges of thumb and index finger so as to form a loop (8a, 8b); the end parts are running between thumb and index finger across the center part located at the back of the hand (7) to a holding strap preferably encircling the wrist (6).

(6) Bandage in the sense of one of the Claims between 2 and 5, featuring a broader section of the tape which constitutes the holding part (1) for the thumb.

(7) Bandage in the sense of one of the Claims between 1 and 6, in which the holding parts (1, 2) for the thumb and at least one other finger as well as the pulling device (3) constitute part of a glove.